A CORPUS STUDY OF METAPHORS IN THE ABSTRACTS OF BIOMEDICAL ARTICLES

Adrian NĂZNEAN[1]

Abstract

Just as everyday language uses metaphors to introduce new notions by referring to analogies and similarities, so does the language of medicine. The purpose of this study was to identify and explain the use and meanings of metaphors in a corpus of abstracts of 31 articles in the field of orthopaedics. The tokens were categorized according to their meaning under distinct headings. The study identified forty-three tokens, the meaning of some of which being subjected to analysis and explanations.

Keywords: biomedical articles, metaphor, token, corpus-based research, orthopaedics.

Introduction

The study of metaphors, indispensable instruments of language, has been the interest of many linguists (Lakoff & Johnson, Halliday, Salager-Meyer, Steen) who have tried to describe, categorise, analyse, or explain these figurative language occurrences in human communication. Metaphors, in fact, act as tools that allow us to understand one aspect of a concept in terms of another, thus hiding other aspects of the concept (Lakoff & Johnson 1980:10).

The human body has always been a concern of mankind, scientists always struggling to describe it as accurately as possible. As such, the language of medicine has made constant use of these linguistic devices in order to render the closest possible meaning of concepts. While it is not always easy to understand the resulting meaning of a metaphor (van Rijn-van Tongeren 1997: 22), this study will attempt to shed some light on the use and connotation of some metaphors used in orthopaedics discourse.

Design of the study

Thirty-one abstracts of medical articles were included in the study. All of the abstracts were retrieved from the same issue of one journal (International Orthopaedics, Volume 38, Issue 2, February 2014). The abstracts belonged to two types of articles: original papers and review articles. The ratio between the two types of articles was 25-6 (namely 80.65% and 19.35%, respectively). The total number of words in the 31 abstracts was 7223, their length varying from 131 to 363, mean length 233 words.

Concordances were identified using AntConc 3.4.3w software for Windows.

Findings

Forty-three metaphorically used words and phrases were identified. These tokens were grouped under the following seven headings: anatomical parts, elements, methods, processes, results, tools, and various (see Table 1). Since explaining and analysing all of

[1] Assistant prof. PhD, University of Medicine and Pharmacy of Târgu Mureş.

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the metaphors are beyond the scope of this study, I will resort to the description of only some of the metaphorical expressions.

Metaphor analysis

Since most of the abstracts present details of research on knee arthroplasty, the three metaphorical phrases that the study identified in relation to anatomical parts, namely *fibula head*, *posterolateral capsule*, and *tibial plateau*, concern regions around the knee. Thus, *fibula head* refers to the proximal end of the fibula, one of the two bones in the lower leg. It is known under different names, such as *proximal end of fibula*, *upper end of fibula*, or *caput fibulae* in Latin terminology. However, the metaphorical name derives from the analogy, a special type of similarity (Haser 1973: 20) of the upper part of it, this upper irregular quadrate area being considered the "head" of the bone. On the other hand, the word *head* may denote an important landmark as well, since this place serves as the attachment site for several muscles.

As far as the knee is concerned, its capsule is a complex of anatomical structures – fibrous material, tendons and ligaments – that surround the inner joint. The meaning of capsule is often that of a membrane or sac enclosing a body part. In anatomy, *posterolateral capsule* is an area of attachment.

One of the composing elements of the metaphor *tibial plateau*, that is *plateau*, has its origin in the Middle French word describing a land area with a relatively level surface raised above adjacent land. Similarly, the proximal end of the tibia has a flattened area which resembles a plateau.

Table 1. Tokens identified by the study

Anatomical parts	Elements	Methods	Processes	Results	Tools	Various
fibula head	tibial component	gap-balancing technique	blood loss	findings	cutting guides	bearing geometry
posterolateral capsule	insert	insertion	bone defect	malalignment	cutting jigs	standard population
tibial plateau	implant	irrigation	bone loss	outcome	spacer	bilateral skyline
	femoral component	jig-assisted	cartilage erosion	residual stiffness		bone stock
		implantation	debridement	condylar liftoff		flexion deficit
		release	pathway			landmark
		navigation/ navigated/ computer navigated	follow-up			magnitudes
		tibial slope	translation			milestone
		wedges	femoral rollback			shelf life
			revision			

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Another metaphorical expression, *tibial component*, was encountered in 4 of the abstracts included in the study. Its categorisation under the heading of elements is due to the fact that the tibial component is typically a flat metal platform with a strong cushion of polyethylene. The explanation lies in the fact that this component is inserted into the tibia by means of a metal portion. The other constituent of the implant is the *femoral component*, which, needless to say, is inserted into the femur.

One of the most frequently encountered metaphors, 19 concordances in 11 of the 31 abstracts, is *implant*. All of the occurrences of the term are nouns referring to the object placed inside the body by surgical means. Its derivates, namely *implantation* as the process, *implanted* as the past and past participle of the verb were also recorded in the abstracts.

The following metaphors belonging to the category of methods will be discussed: *gap-balancing technique*, *irrigation*, *tibial slope*, and *wedge*.

There are several types of *gap balancing techniques* but their aim is the release of ligament prior to cutting any section of the bone. Ligament releases are needed to correct fixed deformities and to bring the limb into the correct approximate alignment. Regardless of the approach, the main concern in such a knee surgery is to achieve optimal flexion and extension gap in order for the knee to regain its natural movement (Daines & Dennis 2014).

According to the Merriam-Webster online dictionary, *irrigation* is defined as the *therapeutic flushing of a body part with a stream of liquid*[2], a method that is similar to watering an area of land by artificial means. The term *irrigation* encountered in one of the abstracts refers to a cleansing action in order to remove any debris resulting from knee arthroplasty.

In the only abstract where the phrase *jig-assisted* occurs, it collocates with *total knee replacement* and with *knee*. This method uses a device as a guide in order to maintain the correct positional relationship between the bone and the tool. Similarly, the term *jig* in the *cutting jig* metaphor will refer to the guiding device when cutting off a fragment of a bone.

Also as guiding devices, as the previously mentioned *jig*, computers can be used in orthopaedic surgeries. The metaphorical usage highlighted here is that of the term *navigate* (*navigation/ computer navigated*) a technique which yields more satisfactory results in surgical interventions.

Much of our everyday language consists of dead metaphors, that is, words that were once used to describe new concepts more vividly, but which language now uses as the standard reference to something. Such is the case of the word *loss* which collocates in two metaphorical uses with the terms *blood* and *bone*. In the corpus of the abstracts included in the present study, *blood loss* refers to the process of bleeding connected to surgery. As such, some of the phrases with which *blood loss* collocates are *peri-operative*, *intra-operative*, and *post-operative* to describe the moment when bleeding occured.

While *bone loss* may also indicate the presence of conditions such as osteoporosis or osteopaenia, the phrases recorded in the abstracts refer to the decrease in the amount of

[2] http://www.merriam-webster.com/dictionary/irrigation

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bone induced inadvertently by a surgeon or by the medical treatment used in treating the condition, even if this implies removing a part of the bone in order to insert an implant, for example.

Two metaphorical phrases in relation with post-surgical processes are *follow-up* and *revision*. Follow-up literally means that the condition of the patients is closely followed and recorded in order to assure proper recovery/ curing. Such follow-ups may extend from a few months to several years, sometimes depending on factors such as survivorship. The *revision* surgery is performed in order to replace an implant which has failed due to age, product defect, or wearing. Thus, the meaning of *revision* in this case is literally that of correcting or improving the implant.

The two metaphors in the category termed various that I particularly find interesting since dealing with orthopaedics terminology are *landmark* and *milestone*. In common language *landmark* undoubtedly refers to a place/ building that is easily visible and recognisable. In our case, the common meaning is carried to orthopaedics to denote an anatomical structure used as a point of orientation in locating other structures. The only abstract which uses the phrase does it with reference to the fibula head which can be used as an orientation point. Similarly, also a geographical reference at its basis, *milestone* represents an important point in the progress or development of something, reference in the article being made to the reliability of one particular knee prosthesis.

Conclusion

In Lakoff and Johnson's view, metaphors are pervasive in our daily lives, both in language and in thought (1980: 3). In medical discourse, metaphors are more than mere rhetorical flourishes of the language as they can help physicians explain complex biologic processes to their patients (Reisfield & Wilson 2004: 4024). Since language reflects thinking, investigating language will help us to gain insight into the process of concept formation (van Rijn-van Tongeren 1997: 13).

As this study proves, nearly all scientific terms used metaphorically in the corpus are rooted in nontechnical language. This paper has also proved that metaphors provide a way to express and idea which cannot be expressed identically in any other way. All the metaphorically used words and phrases help the readers of medical articles to visualise and better understand abstract or concrete expressions, and as such are not simple tools embellishing the language.

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